UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,541	03/03/2005	Volker Thole	03100232AA	5178

30743 7590 12/29/2009

WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

EXAMINER	
THEODORE, MAGALI P	

ART UNIT	PAPER NUMBER
1791	

MAIL DATE	DELIVERY MODE
12/29/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/526,541	THOLE ET AL.	
	Examiner	Art Unit	
	Magali P. Théodore	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 112

Claims 1-2, 5-13 and 16-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the dry method." There is insufficient antecedent basis for this limitation in the claim. Because it is not clear which methods are excluded by this limitation, the scope of the claim is unclear. For the sake of compact prosecution, the word "dry" has been interpreted in its broad sense as it is used in everyday language.

Claim Rejections - 35 USC § 103

Claims 1, 2, 5-10, 13, 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ljungbo** (WO 92/04169 A1) in view of Berg et al. (US 4,820,345), henceforth **Berg**, and Moyes et al. (US 2002/0100996), henceforth **Moyes**.

Regarding **claims 1-2**, Ljungbo discloses providing wood fibers in an dry air stream (page 1 paragraph 2 line 4-6), adding spray-dried sodium silicate water glass (page 3 example 1 line 4) to wood fibers (page 2 line 1) to form a mixture, forming a mat (cake, p 3 line 9) and compressing that material and curing it in the closed press (page 3 example 1 line 8-10). Ljungbo specifies that the silicate powder must be soluble in water (quickly dissoluble in the water, page 2 paragraph 2 last 5 lines).

Ljungbo does not specify a mixing temperature. However, Ljungbo teaches that using dried sodium silicate (a powder of sedium [sic] waterglass) soluble in water added

at "about 100 °C" (page 2, paragraph 3). The claimed temperature of 95 °C is *about* 100 °C, which Ljungbo teaches. Furthermore, because Ljungbo teaches dissolution, the mixing temperature is a result-effective parameter because temperature affects solubility. It is well known that most solutes are more soluble at higher temperatures. Temperature is also a result-effective parameter because it partially determines the phase of water, which is used here as a solvent for the silicate. Ljungbo's rough 100 °C is the boiling point of water. Whether the water is above or below 100 °C determines whether one has liquid water, steam or both. The phase of the solvent water affects its ability to dissolve the silicate. Therefore, it would have been obvious to one of ordinary skill optimize the mixing temperature in Ljungbo's method in order to control how the silicate dissolves in the water. Optimizing a result-effective parameter known in the art does not impart patentable distinction to an invention. See MPEP 2144.05 [R-5] II, in re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Ljungbo does not teach the claimed curing temperature. However, Berg teaches mixing wood fibers with water glass (column 3 example 1 items 1-3) or an alkali silicate (1:66) and curing them in a press at 160/170 °C (3:43), which exceeds the claimed minimum of 80 °C. In other words, the range taught by the prior art lies within the claimed range. In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. Cf. MPEP 2144.05[R-5] I.

Ljungbo does not specify the density of the mat after pressing. However, Moyes teaches compressing a fibrous nonwoven to a density of 350-600 kg/m^3 to make an

inexpensive yet effective core for a fire door (paragraph 0021 line 1-5) and compressing the same material to 900-1,300 kg/m^3 to make fire-door support structures capable of holding threaded fasteners (paragraph 0021 line 5-10). Each of these ranges overlaps with the claimed range of 350 kg/m^3 to 1,250 kg/m^3. Therefore it would have been obvious to one of ordinary skill in the art to compress the fibrous nonwoven taught by Ljungbo to densities ranging from 350 kg/m^3 to 1,250 kg/m^3 because Moyes teaches those densities as required by the product's intended use. *Alternatively*, in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. Cf. MPEP 2144.05[R-5] I. *Alternatively*, it would have been obvious to one of ordinary skill in the art to combine the use of these ranges with the steps taught by Ljungbo in order to achieve predictable results with a reasonable expectation of success.

Ljungbo does not teach adding the water glass either before or during defibering or into a transport element of the defibering apparatus. However, adding the water glass before, during or after defibering has not been shown to produce unexpected results. While Applicant's specification explains that the water glass does not lose efficacy from being added early in the process, it is not clear that there is any benefit, either. Therefore, it would have been obvious to one of ordinary skill in the art to add the water glass at any time. Unless it produces unexpected results, the order of the steps in a method and the order in which ingredients are added does not impart patentable distinction to an invention. In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930)

Regarding **claim 5**, Ljungbo discloses a mixture made from 100 parts wood fiber and 25 parts dry water glass, the wood fibers having a moisture content of 30 % prior to injection into the air stream (page 3 example 1 line 3-7). If the ratio of water to dry fiber in the wood fiber is 70:30, then every 100 parts of wood brings with it 43 parts of water (30 × 100 ÷ 70 = 43). Therefore, the mixture, which forms the mat has a moisture content less than 26 % (43 /(100 +25 +43) = 26 %)--less than 26 % because, in the absence water vapor, water is lost to the air stream (page 3 example 1 line 3) which carries the wood fibers. This upper limit differs from the 25 % limited recited by the claim by only one percentage point. Ljungbo also teaches varying the moisture content of the wood fibers in different applications of his invention (page 3 example 1 line 7 and p 3 example 2 line 4-5). Therefore it would have been obvious to one of ordinary skill in the art to vary the moisture content of the fibers such the moisture content of the mat is less than 25 % because Ljungbo teaches a fibrous nonwoven containing less than 26 % and Ljungbo teaches varying the moisture content of the fibers used in the mixture.

Regarding **claim 6**, Ljungbo teaches adding 25 parts water glass to 100 parts dry wood fibers; 25/125 is 20 % (page 3 line 4-7).

Regarding **claims 7**, Ljungbo teaches adding all the water glass after the defibering process (page 3 example 1).

Regarding **claim 8**, Ljungbo does not teach adding the water glass either before or during defibering or into a transport element of the defibering apparatus. However, adding the water glass before, during or after defibering has not been shown to produce unexpected results. While Applicant's specification explains that the water glass does

not lose efficacy from being added early in the process, it is not clear that there is any benefit, either. Therefore, it would have been obvious to one of ordinary skill in the art to add the water glass at any time. Unless it produces unexpected results, the order of the steps in a method and the order in which ingredients are added does not impart patentable distinction to an invention. In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930)

Regarding **claim 9**, Ljungbo teaches using a silicate water glass (page 2 paragraph 3 line 1) as in combination with a filler (page 3 last paragraph line 1).

Regarding **claim 10**, Ljungbo teaches adding a hardener to the water glass before or after adding the wood fibers (page 2 paragraph 5).

Regarding **claim 13**, Ljungbo teaches adding 25 parts water glass to 100 parts dry wood fibers; 25/125 is 20 % (page 3 lines 4-7).

Regarding **claim 16**, Ljungbo teaches adding 25 parts water glass to 100 parts dry wood fibers; 25/125 is 20 % (page 3 lines 4-7).

Regarding **claim 19**, Ljungbo teaches using a silicate water glass (page 2 paragraph 3 line 1) as in combination with a filler (page 3 last paragraph line 1).

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ljungbo** in view of **Berg** and **Moyes** as applied to claim 10 above and further in view of Nürnberger et al. (DE 19500653 A1), henceforth **Nürnberger**. All references to Nürnberger are to the translation provided.

Ljungbo does not indicate the use of acid formers or additives that facilitate faster curing. However, Nürnberger et al. teach the use of carbon dioxide, an acid gas, to harden molded mixtures of wood fibers and water glass (page 9 paragraph 3 - p 10 line 2, p 11 line 1-3). Therefore, it would have been obvious to one of ordinary skill in the art to add to the water glass taught by Ljungbo, Gäth et al. and Moyes et al. a substance to form carbon dioxide or another acid gas because Nürnberger et al. teach using carbon dioxide as a hardener. *Alternatively*, it would have been obvious to one of ordinary skill in the art to combine the use of carbon dioxide taught by Nürnberger et al. with the steps taught by Ljungbo to achieve the predictable result of increased hardness with a reasonable expectation of success.

Claims 3-4, 14-15 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ljungbo in view of **Shen** (US 5,017,319), **Berg** and **Moyes**.

Regarding **claims 3-4**, Ljungbo discloses providing wood fibers in an air stream (page 1 paragraph 2 line 4-6), adding spray-dried sodium silicate water glass (page 3 example 1 line 4) to wood fibers (page 2 line 1), mixing them to form a fibrous nonwoven (cake, p 3 line 9), and compressing that material and curing it in the closed press (page 3 example 1 line 8-10). Ljungbo specifies that the silicate powder must be soluble in water (quickly dissoluble in the water, page 2 paragraph 2 last 5 lines).

Ljungbo does not teach the presence of water vapor in the mixing step. However, Ljungbo teaches controlling the moisture content of the wood fibers (page 3 example 1 line 7 and page 3 example 2 line 4-5). Steam hydrates the wood fibers,

reversing the loss of moisture to the air stream which carries them. Therefore it would have been obvious to one of ordinary skill in the art to add steam the air stream taught by Ljungbo because Ljungbo teaches controlling the fibers' moisture content and allowing some steam to stay with the fibers would maintain their humidity.

A second rationale for adding water vapor in the mixing step is provided by Shen. Shen teaches using superheated steam to form a thermoset, waterproof adhesive from the natural binders in the wood (2:36-39, 2:44-52 and 5:29-40). Shen teaches heating the steam to a temperature between 160 °C and 260 °C (5:35-36) in order to form this binder without burning it (5:41-43). This teaching provides a rationale not only for providing steam, but also for mixing at a temperature within the claimed range of 105 °C to 180 °C. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. Cf. MPEP 2144.05[R-5] I. Therefore it would have been obvious to one of ordinary skill in the art both to provide a water vapor atmosphere and to mix at the claimed temperatures because Shen teaches using steam at these temperatures in order to produce a natural thermosetting binder from the wood fibers.

Ljungbo does not teach the claimed curing temperature. However, Berg teaches mixing wood fibers with water glass (column 3 example 1 items 1-3) or an alkali silicate (1:66) and curing them in a press at 160/170 °C (3:43), which exceeds the claimed minimum of 80 °C. In other words, the range taught by the prior art lies within the claimed range. In the case where the claimed ranges "overlap or lie inside ranges

disclosed by the prior art" a prima facie case of obviousness exists. Cf. MPEP 2144.05[R-5] I.

Regarding **claim 14**, Ljungbo discloses a mixture made from 100 parts wood fiber and 25 parts dry water glass, the wood fibers having a moisture content of 30 % prior to injection into the air stream (p 3 example 1 ln 3-7). If the ratio of water to dry fiber in the wood fiber is 70:30, then every 100 parts of wood brings with it 43 parts of water (30 × 100 ÷ 70 = 43). Therefore, the mixture, which forms the mat has a moisture content of than 26 % (43 /(100 +25 +43) = 26 %), which differs from the claimed upper limit by only 1 percentage point. Ljungbo also teaches varying the moisture content of the wood fibers in different applications of his invention (p 3 example 1 ln 7 and p 3 example 2 ln 4-5). Therefore it would have been obvious to one of ordinary skill in the art to vary the moisture content of the fibers such the moisture content of the mat is less than 25 % because Ljungbo teaches a fibrous nonwoven containing 26 % and Ljungbo teaches varying the moisture content of the fibers used in the mixture.

Regarding **claim 15**, Ljungbo teaches adding 25 parts water glass to 100 parts dry wood fibers; 25/125 is 20 % (p 3 ln 4-7).

Regarding **claims 17-18**, Ljungbo teaches fir chips (page 3 line 1). Ljungbo does not teach adding the water glass either before or during defibering or into a transport element of the defibering apparatus. However, adding the water glass before, during or after defibering has not been shown to produce unexpected results. While Applicant's specification explains that the water glass does not lose efficacy from being added early in the process, it is not clear that there is any benefit, either. Therefore, it would have

been obvious to one of ordinary skill in the art to add the water glass at any time. Unless it produces unexpected results, the order of the steps in a method and the order in which ingredients are added does not impart patentable distinction to an invention. In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Ljungbo** in view of **Shen**, **Berg** and **Moyes** as applied to claim 3 above and further in view of **Nürnberger**.

Regarding **claim 20**, Ljungbo does not indicate the use of acid formers or additives that facilitate faster curing. However, Nürnberger et al. teach the use of carbon dioxide, an acid gas, to harden molded mixtures of wood fibers and water glass (page 9 paragraph 3 - p 10 line 2, p 11 line 1-3). Therefore, it would have been obvious to one of ordinary skill in the art to add to the water glass taught by Ljungbo, Gäth et al. and Moyes et al. a substance to form carbon dioxide or another acid gas because Nürnberger et al. teach using carbon dioxide as a hardener. *Alternatively*, it would have been obvious to one of ordinary skill in the art to combine the use of carbon dioxide taught by Nürnberger et al. with the steps taught by Ljungbo to achieve the predictable result of increased hardness with a reasonable expectation of success.

Response to Arguments

Applicant's arguments with respect to **Gäth** have been considered but are moot in view of the new ground(s) of rejection.

Applicant's other arguments filed August 26, 2009 have been fully considered but they are not persuasive.

Regarding "**dry method**" and "**wet method**," Applicant argues that these terms are well defined and commonly understood industry terms. On August 26, 2009, Applicant provided definitions from Panel Guide's Annexes 2E and 2F for "dry process" and "wet process" respectively. Applicant also provided patents that exemplify these definitions. The problem with these definitions is that, while the patents supplied by Applicant use certain aspects of those phrases with reasonable consistency of meaning, Applicant's own specification uses the phrase "dry method" differently.

The examiner read the Panel Guide and the patents provided by Applicant on August 26, 2009 and looked for the defining features that appeared consistently in all those materials. Using that approach, the examiner identified the following defining features of the dry method and the wet method: In the dry method, one lays the fibers to form the molded body after the fibers have been dried with a synthetic resin; the resin provides the binding power to hold the work together. In the wet method, one lays the fibers to form the work while the fibers are wet with water; the binding power comes from constituents naturally present in the fibers. These features are present in all the patents supplied by Applicant on August 26, 2009.

The irony is that, in Applicant's specification, Applicant states that "it is known to produce a fiberboard without binders by the dry method. In this case, in a manner compatible with the wet method, the fiber composite is intended to be produced by the

activation of bonding forces inherent in the wood." [0006, first 2 lines] With this statement, Applicant seems to say that the dry method does not inherently involve a synthetic resin, which is required by the definition provided by the Panel Guide and appears in every other document provided by Applicant as an example of the dry method. (According to the Panel Guide, a typical dry process "reducing wood down to small chips, which are then thermally softened and mechanically refined into fibres, which are then *mixed with a synthetic resin binder*. The *resinated fibres* are dried and then formed into a mattress for ready for pressing." Cf. Annex 2E, page 2 paragraph 2, emphases added.) In conclusion, if there are clear and industry-accepted definitions of "wet method" and "dry method," Applicant has not yet provided these definitions or evidence of their use.

Regarding the **surprising effect**, Applicant argues that adding the water glass in the blowline gives the unexpected result of binding where one would normally expect sedimentation. Applicant calls upon Dr. Thole's declaration as evidence. With all due respect to Applicant, while the declaration is helpful in providing background to understand the spirit of the disclosed invention, it has not accomplished the task of providing evidence for an unexpected result. In order to show an unexpected result, Applicant would need at least to provide empirical (not just theoretical) evidence to support the view that

(a) at the time of the invention, one of ordinary skill in the art would either have had no expectations or expected something other than what that combination actually produces

(b) Applicant's claimed combination produces a different result contrary to those expectations

(c) Those specific claimed elements in question are critical in producing that difference in the results.

Applicant has not yet provided this information.

Regarding **Ljungbo's teaching away**, Applicant appears to make two slightly different arguments about Ljungbo and water glass.

On page 9 lines 3-7 of the Remarks, Applicant that Ljungbo teaches away from the use of water glass by teaching that there have been problems with it (page 1 paragraph 5). In response to Applicant's argument, first, Applicant and Ljungbo are using the term "water glass" differently. Applicant's specification uses "water glass" to refer to the silicate itself, as in "water-soluble potassium or sodium silicates (water glasses)" [0015]. Ljungbo uses "water glass" to refer to the solution of silicate in water, as in "waterglass i. e. water solutions of alkali silicates" (page 1 paragraph 5 lines 1-2). Therefore, Ljungbo's teaching about "water glass" in paragraph 5 is really about water glass in aqueous solution, not water glass as Applicant is using the term. Second, Ljungbo *teaches* using alkali silicates (see rejection above and Ljungbo's examples). Ljungbo's teachings of the problems with water glass are part of his explaining the

problems his invention is meant to address: "According to this invention these problems are solved through adding the glue as a powder" (paragraph 6)—not by eliminating the use of alkali silicates.

On page 10 second full paragraph of the Remarks, Applicant argues that Ljungbo teaches away from adding the water glass *in solution*. In response to Applicant's argument, Applicant has not claimed adding water glass *in solution*. Applicant has claimed adding water glass in *soluble form*.

Regarding **Nürnberger**, Applicant argues that because Nürnberger is making biodegradable feed containers and Applicant is making doors, these processes are too different for one of ordinary skill in the art to have combined their teachings. In response to Applicant's argument, first, the examiner is combining Nürnberger's teachings with those of Ljungbo, not with those of Applicant. Ljungbo's invention is drawn to "the production of fiber bodies, disks, profiles, panels, insulating carpets, packing material etc" (abstract, first sentence). Ljungbo's invention has broad applications. Second, like Ljungbo, Nürnberger is molding wood fibers (page 14 third line from the bottom) with water glass (potassium silicate, page 15 line 2). In other words, even though these references do not recite making the same product, the methods themselves are sufficiently related to have warranted the combination of their teachings by one of ordinary skill in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Magali P. Théodore whose telephone number is (571) 270-3960. The examiner can normally be reached on Monday through Friday 9:00 a.m. to 6:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina A. Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Magali P. Théodore/
Examiner, Art Unit 1791

/Christina Johnson/
Supervisory Patent Examiner, Art Unit 1791